

Listing of Claims

1. (amended herein) A method of incorporating a UV inhibitor into a poly(ethylene terephthalate) or a modified poly(ethylene terephthalate) polyester resin, the method comprising:

a) forming a reaction mixture containing from 0.0 ppm to 5 ppm substantially free of a titanium containing ester exchange catalyst compound and comprising:

a diol,

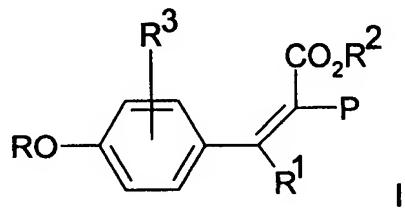
a diacid component comprising one or more of selected from the group consisting of terephthalic dicarboxylic acids or dimethyl terephthalate, dicarboxylic acid derivatives, and mixtures thereof,

an antimony containing compound, present and in an amount of less than 0.1% of the total weight of the reaction mixture,

a phosphorus containing compound present and in an amount of less than about 0.1% of the total weight of the reaction mixture,

a metal containing compound selected from the group consisting of zinc containing compounds and manganese containing compounds, present in an amount from about 10 ppm to about 300 ppm, and

a UV inhibitor having formula I:



wherein,

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R is hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, cycloalkyl, substituted cycloalkyl, or alkenyl;

R¹ is hydrogen, or alkyl, aryl, or cycloalkyl, all of which may be substituted;

R² is hydrogen or any radical which does not interfere with condensation with the polyester;

R³ is hydrogen or 1-3 substituents selected from alkyl, substituted alkyl, alkoxy, substituted alkoxy, and halogen;

P is cyano or a group selected from carbamyl, aryl, alkylsulfonyl, arylsulfonyl, heterocyclic, alkanoyl or aroyl, all of which groups may be substituted; and

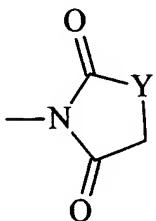
b) polymerizing the reaction mixture in a polycondensation reaction system[,] to obtain the poly(ethylene terephthalate) or the modified poly(ethylene terephthalate) polyester resin, the polycondensation reaction system having a first reaction chamber, a last reaction chamber, and one or more intermediate reaction chambers between the first reaction chamber and the last reaction chamber, wherein the reaction system is operated in series such that the reaction mixture is progressively polymerized in the first reaction chamber, the one or more intermediate reaction chambers, and the last reaction chamber.

2. (previously presented) The method of claim 1 wherein:

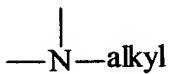
R² is hydrogen, alkyl, aralkyl, cycloalkyl, cyanoalkyl, aryl, alkoxyalkyl or hydroxyalkyl;

R is selected from hydrogen; cycloalkyl; cycloalkyl substituted with one or two of alkyl, alkoxy or halogen; phenyl; phenyl substituted with 1-3 of alkyl, alkoxy, halogen, alkanoylamino, or cyano; straight or branched lower alkenyl; straight or branched alkyl and such alkyl substituted with 1-3 of the following: halogen; cyano; succinimido; glutarimido; phthalimido; phthalimidino; 2-pyrrolidono; cyclohexyl; phenyl; phenyl substituted with alkyl, alkoxy, halogen, cyano, or alkylsulfamoyl; vinylsulfonyl; acrylamido; sulfamyl; benzoysulfonicimido; alkylsulfonamido; phenylsulfonamido; alkenylcarbonylamino; groups of the formula

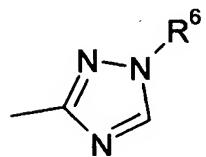
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wherein Y is -NH-,



-O-, -S-, or -CH₂O-; -S-R⁴; SO₂CH₂CH₂SR⁴; wherein R⁴ is alkyl, phenyl, phenyl substituted with halogen, alkyl, alkoxy, alkanoylamino, or cyano, pyridyl, pyrimidinyl, benzoxazolyl, benzimidazolyl, benzothiazolyl, or a radical of the formulae



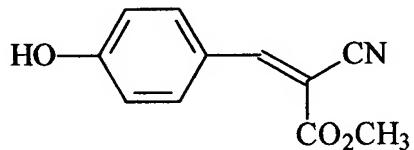
-NHXR⁵; -CONR⁶R⁶; and -SO₂NR⁶R⁶; wherein R⁶ is selected from H, aryl, alkyl, and alkyl substituted with halogen, phenoxy, aryl, -CN, cycloalkyl, alkylsulfonyl, alkylthio, or alkoxy; X is -CO-, -COO-, or -SO₂-; R⁵ is selected from alkyl and alkyl substituted with halogen, phenoxy, aryl, cyano, cycloalkyl, alkylsulfonyl, alkylthio, and alkoxy; and when X is -CO-, R⁵ also can be hydrogen, amino, alkenyl, alkylamino, dialkylamino,

arylarnino, aryl, or furyl; alkoxy; alkoxy substituted with cyano or alkoxy; phenoxy; or phenoxy substituted with 1-3 of alkyl, alkoxy, or halogen; and

P is cyano, carbamyl, N-alkylcarbamyl, N-alkyl-N-arylcaramyl, N,N-dialkylcarbamyl, N,N-alkyl-arylcaramyl, N-arylcaramyl, N-cyclohexylcaramyl, aryl, 2-benzoxazolyl, 2-benzothiazolyl, 2-benzimidazolyl, 1,3,4-thiadiazol-2-yl, 1,3,4-oxadiazol-2-yl, alkylsulfonyl, arylsulfonyl, alkanoyl or aroyl.

3. (original) The method of claim 1 wherein R¹ is hydrogen.
4. (original) The method of claim 1 wherein P is cyano.
5. (original) The method of claim 1 wherein R¹ is hydrogen and P is cyano.
6. (amended herein) The method of claim 1A method of incorporating a UV inhibitor into a poly(ethylene terephthalate) or a modified poly(ethylene terephthalate) polyester resin, the method comprising:
 - a) forming a reaction mixture containing from 0.0 ppm to 5 ppm titanium and comprising:
a diol,
a diacid component comprising one or more of terephthalic acid or dimethyl terephthalate,
an antimony containing compound, present and in an amount of less than 0.1% of the total weight of the reaction mixture,
a phosphorus containing compound present in an amount of less than about 0.1% of the total weight of the reaction mixture,
a metal containing compound selected from the group consisting of zinc containing compounds and manganese containing compounds, present in an amount from about 10 ppm to about 300 ppm, and

~~wherein the UV inhibitor is a compound having the formula II:~~



b) polymerizing the reaction mixture in a polycondensation reaction system[,] to obtain the poly(ethylene terephthalate) or the modified poly(ethylene terephthalate) polyester resin, the polycondensation reaction system having a first reaction chamber, a last reaction chamber, and one or more intermediate reaction chambers between the first reaction chamber and the last reaction chamber, wherein the reaction system is operated in series such that the reaction mixture is progressively polymerized in the first reaction chamber, the one or more intermediate reaction chambers, and the last reaction chamber.

7. (original) The method of claim 1 wherein the reaction mixture contains from 0.0 to 2 ppm titanium metal.

8. (amended herein) The method of claim 1 wherein the polymerization is carried out with each reaction chamber having a reaction pressure such that the reaction pressure in the first chamber is from about 20 to 50 psi and the reaction pressure in the last reaction chamber is from about 0.1 mm Hg to about 2 mm Hg with the reaction pressure in each of the one or more intermediate reactors being between 50 psi and 0.1 mm Hg.

9. (original) The method of claim 1 wherein the reaction mixture contains 0.0 ppm titanium metal.

10. (original) The method of claim 1 wherein the diol component is selected from the group consisting of ethylene glycol, 1,4-cyclohexanedimethanol, 1,2-propanediol, 1,3-propanediol, 1,4-butanediol, 2,2-dimethyl-1,3-propanediol, 1,6-hexanediol, 1,2-cyclohexanediol, 1,4-cyclohexanediol, 1,2-cyclohexanedimethanol, 1,3-cyclohexanedimethanol, X,8-bis(hydroxymethyl)tricyclo-[5.2.1.0]-decane wherein X represents 3, 4, or 5; diols containing one or more oxygen atoms in a chain and mixtures thereof.

11. (amended herein) The method of claim 1 wherein the diacid component further comprises one or more a component selected from the groups consisting of terephthalic acid, isophthalic acid, naphthalene dicarboxylic acid, 1,4-cyclohexanedicarboxylic acid, 1,3-cyclohexanedicarboxylic acid, succinic acid, glutaric acid, adipic acid, sebacic acid, 1,12-dodecanedioic acid, and esters thereof; and mixtures thereof.

12. (amended herein) The method of claim 11 wherein the diacid component comprises dimethylterephthalateisophthalic acid or ester thereof.

13. (original) The method of claim 11 wherein the molar ratio of the diol component to the diacid component is from about 0.5 to about 4.

14. (amended herein) The method of claim 1, wherein the reaction mixture further comprises a component containing a metal selected from the group consisting of zinc, manganese, and mixtures thereof, an antimony in an amount from about 20 ppm to about 500 ppm, based on the weight of the reaction mixture containing component, and a phosphorus containing component.

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15. (original) The method of claim 14 wherein the metal containing component is zinc acetate or manganese acetate, the antimony containing component is antimony trioxide, and the phosphorus containing component is phosphoric acid.

16. (original) The method of claim 15 wherein the metal containing component is zinc acetate present in an amount from about 10 to about 200 ppm.

17. (original) The method of claim 15 wherein the antimony trioxide is present in an amount from about 20 to about 500 ppm.

18. (original) The method of claim 15 wherein the phosphoric acid is present in an amount from about 5 to about 200 ppm.

19. (previously presented) The method of claim 14 further comprising one or more components selected from the group consisting of an iron containing compound, a toner, a cobalt containing compound, and mixtures thereof.

20-58. (canceled)

59. (New) A method of incorporating a UV inhibitor into a poly(ethylene terephthalate) or a modified poly(ethylene terephthalate) polyester resin, the method comprising:

a) forming a reaction mixture containing from 0.0 ppm to 5 ppm titanium and comprising:

a diol component comprising ethylene glycol,

a diacid component comprising one or more of terephthalic acid or dimethyl terephthalate,

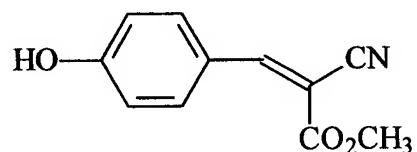
an antimony containing compound in an amount from about 20 ppm to about 500 ppm, based on the weight of the reaction mixture,

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phosphoric acid present in an amount from about 5 ppm to about 200 ppm, based on the weight of the reaction mixture,

a metal containing compound comprising one or more of: a zinc containing compound or a manganese containing compound, present in an amount from about 10 ppm to about 300 ppm, based on the weight of the reaction mixture, and

a UV inhibitor having the formula:



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Jodi L. Owenby

4/18/2007

Date